## Week 3, Term 4 Homework

A Science Experiment!!

**Due Date: Thursday 7th of November.**

**This gives you one week extra to complete this task, more than what you would get for a regular homework task. As a result, we expect this to be entirely completed and done to the best of your ability. Having the extra week to finish this work will also leave you with plenty of time to find all of your own materials to complete the task.**

## Choose ONE of the following experiments to conduct as part of your homework:

## Hurricane In A Bottle

## Many large thunderstorms come together over ocean water and begin to swirl like a vortex. When this vortex becomes powerful enough, it is called a [hurricane](http://www.kidzworld.com/article/5949-all-about-hurricanes). It's easy to make your own model of a [hurricane](http://www.kidzworld.com/article/5949-all-about-hurricanes) using plastic soft drink bottles:

1. Fill the soft drink bottle to the top with water. If you do not have access to a sink nearby or you don't want to move to the kitchen, use a large jug to fill the bottle.
2. Here's the challenge: How long will it take to empty all of the water in the bottle into the jug on the table? Record your prediction on a piece of paper.
3. Without squeezing the sides of the bottle, time how long it takes to empty all of the water. You might want to repeat this several times to validate your time.
4. Fill the bottle to the top with water just as you did before. This time swirl the water by moving the bottle in a clockwise or counter-clockwise motion while the water is pouring out. Keep swirling the water until you see the formation of what looks to be a tornado! The water begins to swirl in shape of a vortex and flows out of the bottle very quickly.

**Twist Of Colour:** Try adding drops of coloured food die and cooking to the water. The oil will float on the surface of the water since oil is less dense than water. When the oil and water swirl together, the less dense oil travels down the vortex first and creates a coloured tornado effect.

## Volcanic Activity

Create a mock volcano to show the force with which a volcano erupts.

1. Cut a cardboard to fit inside a cookie tray to act as the base of the volcano.

2. Slice off the neck of a soft bottle at an angle and fix it on the tray.

3. Fill it with vinegar, dish washing liquid and red food dye, which would form the lava.

4. Shape modeling clay around the soft drink bottle to look like a volcano, with a wide base and narrow top.

5. Once dry, paint the volcano suitably.

6. After the paint has dried, carefully drop some baking soda inside the soda bottle and watch the volcano to erupt.

## Measuring Earthquakes

**Option One**

Explain how earthquakes occur and how they are measured, creating a simple seismometer.

1. Cut two holes next to each other on a cardboard.

2. In a plastic cup, make one hole at the bottom and two holes at exactly the opposite ends, on the rim.

3. Put a texta or fine liner through the bottom hole and stick it with clay.

4. String the two holes on the rim and thread the string through the holes in the cardboard so that the cup is firmly attached to it.

5. Put some weight into the cup to make it heavy.

6. Ask someone to shake the cardboard while another person gradually pulls a paper across the cup, with the tip of the texta or fine liner touching the paper.

7. The scraggy line on the paper imitates a seismic reading.

**Make a Quake Detector**

**Materials:**

* Newspaper
* Shoe Box
* Scissors
* Can of Soup
* Tape
* Felt-tip pen that has a clip and a cap
* 45cm of string
* Paper

**Directions:**

1. Cover your desk with newspaper.
2. Put the shoebox on your desk, then cut a 2.5cm slit in the middle of the lid, about 2.5cm from the end of it.
3. Place the open box upright. Put the can of soup inside the box to hold it down.
4. Positioning the slit away from the box, place the lid on top to form an upside-down "L" Tape the lid to the box.
5. Take the cap off the felt tip pen and put it on the other end of the marker.
6. Tie the string to the clip and the cap.
7. Thread the other end of the string through the slit in the box lid. Adjust the string length so the pen just hits the paper.
8. Tape the string to the box lid to stop it from sliding loose.
9. Place a sheet of paper under the pen. Slowly pull the paper.

Describe the line that your seismometer created. What will the graph made from a seismometer look like when the earth is trembling?

Seismometers — also known as geophones and seismographs — measure motion. Why would scientists want to measure how strong an earthquake is? (Answers will vary. So they can help make buildings, roads, bridges, etc., strong enough to survive earthquakes of varying strengths.)

Presentation Requirements

In conducting this experiment you must complete a procedural text that outlines all of the work that you have done. The procedural text must include:

1. The title of your experiment

2. A prediction of what you think will happen in the experiment

3. A sequenced list of instructions for how to conduct the experiment

4. Observations of what you witnessed as the experiment took place

5. A conclusion which gives your thoughts on why you believe the experiment turned out the way it did

6. At least one diagram that assists in explaining how to conduct the experiment

Along with your procedural text, you must also include **either** 3 – 5 photographs of the experiment being completed **or** a video of the experiment being completed. If you choose to submit a video, the footage can simply be saved onto a memory stick and brought to school to show your Grade.

**Important Point!**

If none of the experiments offered match the type of natural disaster you have chosen to research for your in-class project, you may choose to complete any one of these experiments or one you have found in consultation with your class teacher.

**Good Luck!!**

